AMENDED CLAIMS
[received by the International Bureau
on 04 January 1995 (04.01.95);
original claims 1 and 5 amended;
new claims 9 and 10 added; remaining claims unchanged (3 pages)]

1. A method of converting an input signal into an output signal, wherein said input signal represents a text in phonemes and said output signal is a digital waveform convertible into an acoustic waveform corresponding to said text, wherein said method comprises:-

(a) dividing said input signal into segments each of which is stored in the access section of a linked database,

(b) for each segment identified in step (a) retrieving a segment of digital waveform from the output section of the database, said output segment being that which is linked to the input segment, and

(c) joining the digital segments retrieved in step (b), said segments being kept in the same order as the equivalent input segments,

whereby the resulting digital signal is a waveform corresponding to the input signal, characterised in that the output section of the database contains an extended digital waveform having a location parameter for identifying any point therein whereby the establishment of beginning and ending location parameters defines a portion of said extended digital waveform, and step (a) comprises establishing beginning and ending location parameters for segments of the input signal and step (c) comprises utilising the parameters established in (a) for retrieving a portion of stored digital waveform.

2. A method according to claim 1, wherein step (a) comprises comparing windows of input signal with windows of the input section of the database to establish a closest match for the input signal.

3. A method according to claim 2, wherein each window has a length equivalent to 5 phonemes.

4. A method according to claim 3, in which the input section of the database is organised into three hierarchical levels; namely

(i) a top level containing single phonemes corresponding to the central phoneme of a window;

(ii) a second level which contains the equivalents of the second and fourth phonemes of a window; and

(iii) a lowest level which contains the equivalents of the first and fifth phonemes of the window, whereby identification of a portion of the lowest level identifies a stored window of phonemes;

and the matching comprises selecting an exact match for the central phoneme of the input window from the first level of the hierarchy, selecting a best match for phonemes 2 and 4 from the second level of the hierarchy corresponding to the selected portion of the top level of the hierarchy and, finally, selecting from the bottom level of the hierarchy the best match for phonemes 1 and 5 from that portion of the bottom level which corresponds to the selection in the second level of the hierarchy.

5. A database for use as a component of a speech engine said database having an output section containing an extended digital waveform and an access section containing signals representing said extended digital waveform in phonemes, said database having a common address parameter identifying common points in both sections whereby the identification of a segment in the access section establishes beginning and ending values for the parameter and hence identifies the corresponding segment of the digital waveform.

6. A database according to Claim 5 in which the access portion contains windows of 5 phoneme length said access section having a hierarchical higher level accessed by the centre phoneme of a window to identify the second and fourth phonemes of a window whereby entries in the higher hierarchical level are equivalent to strings of 3 phonemes

and said access portion also comprises a lower hierarchical level accessed by a string of 3 phonemes to identify the first and fifth phonemes whereby entries in the lower hierarchical level are equivalent to strings of 5 phonemes.

7. A speech engine which comprises a primary processor (11) for converting a text in graphemes into an equivalent text in phonemes and a converter (12) for converting said text in phonemes into a digital waveform, characterised in that the converter (12) includes a database (13) according to ~~either Claim 5 or Claim 6~~ Claim 5.

8. A telephone network which includes a speech engine according to Claim 7, said speech engine being connected to the network for the transmission of the output of the speech engine to a remote location.

9. A method of converting an input signal into an output signal, wherein said input signal represents a text in phonemes and said output signal is a digital waveform convertible into an acoustic waveform corresponding to said text, wherein said method makes use of a two-part database having an access section based on strings of phonemes and an output section containing digital waveforms corresponding to the linked access sections, wherein said method comprises matching a segment of said input signal to select the best match of strings contained in the access section said best match including an exact match for at least one internal phoneme and discarding at least the first and last phonemes of said best match to identify a shorter string of phonemes which is an exact match for a portion of said input signal.

10. A method according to Claim 9, which method includes forming a best match for a window of five phonemes of said input signal discarding at least the first and last phonemes of said best match to identify an exact match for a string of one, two or three phonemes.